

**Ashburtonite****HPb<sub>4</sub>Cu<sub>4</sub>Si<sub>4</sub>O<sub>12</sub>(HCO<sub>3</sub>)<sub>4</sub>(OH)<sub>4</sub>Cl**

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**Crystal Data:** Tetragonal. *Point Group:* 4/*m*. Prismatic along [001], to 0.4 mm, showing {110}, {100}, {001}, and {301}.

**Physical Properties:** *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = n.d.  
D(meas.) = > 4.07 D(calc.) = 4.69

**Optical Properties:** Transparent. *Color:* Blue. *Streak:* Light blue. *Luster:* Vitreous.  
*Optical Class:* Uniaxial (+).  $\omega = 1.786(3)$   $\epsilon = 1.800(4)$

**Cell Data:** *Space Group:* I4/*m*.  $a = 14.1852(8)$   $c = 6.0759(8)$   $Z = 2$

**X-ray Powder Pattern:** Anticline prospect, Western Australia.  
10.2 (100), 4.495 (100), 3.333 (100), 3.013 (90), 5.644 (70), 2.611 (50), 2.805 (30)

<b>Chemistry:</b>	(1)
SiO <sub>2</sub>	14.07
CuO	18.66
PbO	52.17
Cl	2.28
H <sub>2</sub> O	[4.22]
CO <sub>2</sub>	[10.31]
-O = Cl <sub>2</sub>	0.51
<b>Total</b>	<b>[101.20]</b>

(1) Anticline prospect, Western Australia; by electron microprobe, average of four analyses, OH and CO<sub>2</sub> confirmed present by infrared spectroscopy, H<sub>2</sub>O and CO<sub>2</sub> calculated from stoichiometry; corresponds to Pb<sub>3.99</sub>Cu<sub>4.01</sub>HSi<sub>4.00</sub>O<sub>12.03</sub>(HCO<sub>3</sub>)<sub>4.00</sub>(OH)<sub>4.00</sub>Cl<sub>1.10</sub>.

**Occurrence:** In a weathered shear zone cutting shales and graywackes, as an alteration of galena and probably chalcopyrite.

**Association:** Diaboleite, duftite, beudantite, caledonite, plattnerite, cerussite, malachite, brochantite.

**Distribution:** From the Anticline prospect, 11 km west-southwest of Ashburton Downs homestead, Capricorn Range, Western Australia.

**Name:** For its occurrence near the Ashburton Downs pastoral lease and homestead, Western Australia.

**Type Material:** Canadian Museum of Nature, Ottawa, Canada, 58391; Museum Victoria, Melbourne, Australia, M40712.

**References:** (1) Grice, J.D., E.H. Nickel, and R.A. Gault (1991) Ashburtonite, a new bicarbonate-silicate mineral from Ashburton Downs, Western Australia: description and structure determination. *Amer. Mineral.*, 76, 1701–1707.